

We Claim:

- Sub C1
1. An *in vivo* process for delivering a polynucleotide to a parenchymal cell of a mammal, comprising:
 - a) inserting the polynucleotide into a blood vessel;
 - b) externally impeding *in vivo* blood flow; and,
 - c) delivering the polynucleotide to the parenchymal cell.
 2. The process of claim 1 wherein the polynucleotide consists of naked DNA.
 3. The process of claim 1 wherein the polynucleotide is selected from the group consisting of a viral vector and a non-viral vector.
 4. The process of claim 1 wherein the polynucleotide consists of a blocking polynucleotide for preventing gene expression.
 5. The process of claim 4 wherein the parenchymal cell consists of a muscle cell.
 6. The process of claim 5 wherein the muscle cell consists of a leg muscle cell.
 7. The process of claim 5 wherein the muscle cell consists of an arm muscle cell.
 8. The process of claim 7 wherein the arm muscle cell consists of an anterior muscle cell.
 9. The process of claim 8 wherein the anterior muscle cell consists of an anterior superficial muscle cell.
 10. The process of claim 8 wherein the anterior muscle cell consists of an anterior deep muscle cell.
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 11. The process of claim 9 wherein the muscle cell is selected from the group consisting of palmaris longus, pronator teres, flexor carpi radialis, flexor carpi ulnaris, and flexor digitorum spf.
 12. The process of claim 10 wherein the muscle cell is selected from the group consisting of flexor digitorum prof., and pronator quadratus.
 13. The process of claim 7 wherein the arm muscle cell consists of a posterior muscle cell.
 14. The process of claim 13 wherein the posterior muscle cell consists of a posterior superficial muscle cell.
 15. The process of claim 13 wherein the posterior muscle cell consists of a posterior deep muscle cell.

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35. The process of claim 33 wherein compressing mammalian skin consists of applying a cuff over the skin.
36. The process of claim 35 wherein compressing mammalian skin consists of applying a sphygmomanometer cuff over the skin.
37. The process of claim 1 wherein delivery is primarily to limb cells.
38. The process of claim 1 wherein the polynucleotide is delivered to non-vascular parenchymal cells.
- Sub C1 39. An *in vivo* process for delivering a polynucleotide to a mammalian cell, comprising:
- a) inserting the polynucleotide into a blood vessel and applying pressure to the blood vessel wherein the pressure is applied externally to mammalian skin;
 - b) delivering the polynucleotide to the mammalian cell; and,
 - c) maintaining full function of the mammal's limbs subsequent to delivery.
- Feb 21 40. A device for applying pressure to mammalian skin for *in vivo* delivery of a polynucleotide to a mammalian cell, comprising: a cuff used over mammalian skin to impede blood flow thereby increasing delivery efficiency of the polynucleotide to the mammalian cell.

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